



Sleep-Disordered Breathing and Postoperative Outcomes After Elective Surgery

Analysis of the Nationwide Inpatient Sample

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e-Appendix 1. International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) codes used for data extraction and the percentage of each surgical procedure within each surgical category.

Sleep-disordered breathing ICD-9-CM Codes:

- 327.23 Obstructive Sleep Apnea
- 327.20 Organic Sleep Apnea, Not Otherwise Specified (NOS)
- 327.29 Organic Sleep Apnea, Not Elsewhere Classified (NEC)
- 780.51 Insomnia with Sleep Apnea, NOS
- 780.52 Hypersomnia with Sleep Apnea, NOS
- 780.57 Sleep Apnea, NOS

Elective Orthopedic Procedure:

- 81.54 Total Knee Replacement (57%)
- 81.51 Total Hip Replacement (25.7%)
- 80.51 Excision of Intervertebral Disc (12.5%)
- 81.55 Revision of Knee Replacement (1.6%)
- 81.53 Revise Hip Replacement (1.3%)
- 81.52 Partial Hip Replacement (1.2%)
- 81.61 360 Degree Spinal Fusion (0.3%)
- 81.65 Percutaneous vertebroplasty (0.2%)
- 80.50 Excision or Destruction of Intervertebral Disc (0.1%)
- 81.00 Spinal Fusion (0.1%)

Elective Prostate Procedures:

- 60.5 Radical Prostatectomy (86.8%)
- 60.21 Transurethral Prostatectomy (6.8%)
- 60.4 Retropubic Prostatectomy (2.3%)
- 60.3 Suprapubic Prostatectomy (2.2%)
- 60.69 Other Prostatectomy (1.9%)



Elective Abdominal Procedures:

- 45.73 Open and Other Right Hemicolectomy (61.3%)
- 51.22 Cholecystectomy (19.8%)
- 45.8 Total Intra-abdominal Colectomy (5.4%)
- 43.99 Total Gastrectomy (3.6%)
- 43.89 Partial Gastrectomy with Bypass Gastrostomy and Sleeve Resection (3.5%)
- 53.05 Repair of Inguinal Hernia with Graft or Prosthesis (2.5%)
- 17.33 Laparoscopic Right Hemicolectomy (1.5%)
- 43.6 Distal gastrectomy/Partial Gastrectomy with Anastomosis to Duodenum (1.1%)
- 43.5 Proximal gastrectomy with Anastomosis to Esophagus (0.8%)
- 17.35 Laparoscopic Left Hemicolectomy (0.3%)
- 51.21 Other partial cholecystectomy (0.2%)

Elective Cardiovascular Procedures:

- 36.12 Aortocoronary Bypass of Two Coronary Arteries (23.5%)
- 36.13 Aortocoronary Bypass of Three Coronary Arteries (21.1%)
- 35.22 Other Replacement of Aortic Valve (11.4%)
- 36.14 Aortocoronary Bypass of Four or more Coronary Arteries (10.2%)
- 36.15 Single Internal Mammary-Coronary Artery Bypass (10%)
- 36.11 Aortocoronary Bypass of One Coronary Artery (9.6%)
- 39.25 Aorta-Iliac-Femoral Bypass (7.3%)
- 35.24 Replacement of Mitral Valve (3.9%)
- 38.16 Abdominal Endarterectomy (1.2%)
- 36.16 Double Internal Mammary-Coronary Artery Bypass (1%)
- 38.14 Endarterectomy of Aorta (0.4%)
- 35.25 Replace pulmonary valve tissue (0.4%)



e-Appendix 2. Codes used for data extraction of secondary outcomes.

Respiratory Outcomes:

216 Intubation/Mechanical Ventilation based on Clinical Classifications Software. This code encompasses all of the following ICD-9-CM codes: emergent endotracheal intubation not related to anesthesia and surgery (96.04), continuous invasive mechanical ventilation of unspecified duration (96.70), continuous invasive mechanical ventilation < 96 hours (96.71), or continuous invasive mechanical ventilation > 96 hours (96.72).

Respiratory Failure/Respiratory Distress

- 518.82 Acute Respiratory Insufficiency, Acute respiratory distress syndrome
- 518.81 Acute Respiratory Failure
- 518.5 Pulmonary Insufficiency Following Surgery and Trauma
- 518.4 Acute Edema of Lung, unspecified

Pneumonias

- 486 Pneumonia, Organism Unspecified
- 482 Other Bacterial Pneumonia
- 482.8 Pneumonia Due to Other Specified Bacteria
- 482.9 Bacterial Pneumonia Unspecified
- 485 Bronchopneumonia, Organism Unspecified
- 484 Pneumonia in Infectious Diseases Classified Elsewhere
- 507 Pneumonitis Due to Solids and Liquids
- 507.0 Due to Inhalation of Food or Vomitus
- 507.8 Due to Other Solids and Liquids

93.90 Continuous positive airway pressure (CPAP)/Noninvasive Ventilation (NIV)

Tracheostomy

- 31.1 Temporary Tracheostomy
- 31.2 Permanent Tracheostomy

Cardiac Outcomes:

427.31 Atrial Fibrillation

99.69 Conversion of Cardiac Rhythm

Cardiac Procedures:

- 88.55 Coronary Arteriography Using a Single Catheter
- 88.56 Coronary Arteriography Using Two Catheters
- 88.57 Other and Unspecified Coronary Arteriography
- 37.23 Combined Right and Left Heart Cardiac Catheterization
- 37.22 Left Heart Cardiac Catheterization
- 88.54 Combined Right and Left Heart Angiocardiology
- 36.09 Other Removal of Coronary Artery Obstruction
- 00.66 Percutaneous Transluminal Coronary Angioplasty [PTCA] or Coronary Atherectomy
- 36.06 Insertion of Non-Drug-Eluting Coronary Artery Stent(s)
- 36.07 Insertion of Drug-Eluting Coronary Artery Stent(s)

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